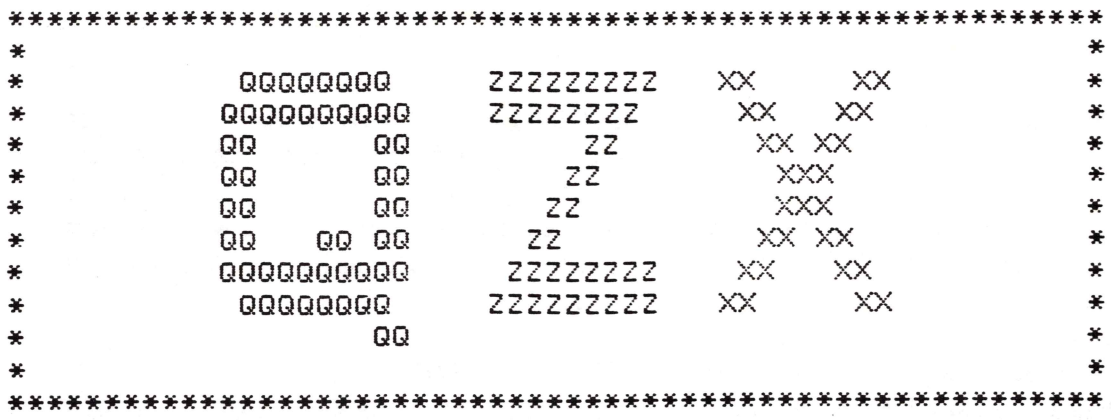

The Journal Covering Amateur Radio & Sinclair Computers
ZX80; Micro-Ace; ZX81; TS1000, 1500, & 2068; QL; Z88
Alex. F. Burr, K5XY, Publisher
2025 O'Donnell Drive
Las Cruces, New Mexico
88001

Volume 9 Number 6 ($1.50 / issue) 1991 May

* EDITOR'S NOTES K5XY
* UNCLASSIFIED ADS
* POPCORN NOISE
* BITS AND BYTES

(716) 834-1716
T & C SERVICES
20 LIBERTY TERRACE
BUFFALO, N.Y. 14215
(716) 834-1716
Call or write for a free catalog of products for the Timex Computer

EDITOR'S NOTES

K5XY

When entering the long program which made up a large part of the last issue, I noticed a real peculiarity in my word processor. It occurred in the PRINT statements when no space appeared after the abbreviation freq. I had to go back through the listing and put in an extra space by hand. I suppose that the proportional spacing chart did not have the correct space because it was always expecting a u to follow the q. That difficulty will be more noticeable now with words like Iraq appearing more often.

I am sorry that this issue is late. It seems I cannot stand prosperity or at least an on time QZX. Actually one of the difficulties is trying to find good short radio related programs which have not been published. These programs are of interest so, if you have any, please send them to me for publication.

In this issue you will see a new advertiser, RMG Enterprises. They claim to be the world's largest full-line T/S dealer. And after looking at their catalog I can believe it. They have new and used T/S computers of all types, more software than you will ever use, accessories, supplies, and lots of T/S books. If you are looking to add to your collection, write to them.

The series on the bugs in the TS2068 ROM is continued in this issue. There are a few more pages of bugs than I would have liked for this issue, but I did not want to split the corrections offered from the description of the bug.

UNCLASSIFIED ADS

WANTED: UNCLASSIFIED ADS for publication in QZX. Cost is 1 cent for each keystroke (characters, blanks, etc.). Payment must be included with order. This is an excellent way to sell your program or unwanted equipment, ask for help, or find a specific program. Send your ad with payment to QZK, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: CP/M Books. Almost new. Half price. THE PROGRAMMER'S CP/M HANDBOOK by Andy Johnson-Laird. Osborn. Hardback 500 pages. $19. THE BYTE GUIDE TO CP/M by Mark Dahmke. McGraw Hill $8.50. 250 pages. CP/M USERS GUIDE by Thom Hogan. Osborn $8.95. 330 pages. THE CP/M PLUS HANDBOOK by Alan R. Miller. Sybex. 250 pages. $7.90. INSIDE CP/M PLUS by David E. Cortesi. Holt-Rinehart. 260 pages. $9.25. CP/M BIBLE by Waite and Angermeyer. Howard Sams. 430 pages. $9.90. USERS GUIDE TO CP/M SYSTEMS by Bove and Rhodes. Baen. 300 pages. $4.50. $1.00 each shipping and handling. A. F. Burr, 2025 O'Donnell, Las Cruces, NM 88001.

QZX Discount: 15% discount on all orders mentioning QZX. T & C Services (address in ad in this issue).

BITS AND BYTES

168 If you plan to use UDG's in a long BASIC program that will include a video mode change enter CLEAR 63255 first. A bug in the system will allow a long BASIC program to overwrite your UDG's if RAMTOP is not lowered first.

169 On the TS2068, to give a contrasting base color use

INK OR PAPER 9

170 On the TS2068, one can get the ink color in a listing by entering E MODE/CAPS SHIFT AND A COLOR 1-7.

6.5.2 GET_STATUS- Returns invalid memory selection status for the Home Bank, ROM Extension and Dock. This results in switching out of either the Home Bank or the Dock when status is "restored". This affects use of the Function Dispatcher and GET_WORD routines, and any other code using GET_STATUS. Figure 6.5-1 shows the patches and additions necessary to correct this routine.

6.5.3 PUT_WORD- Write data passed in Reg. Pair DE is overwritten prior to use. Figure 6.5-2 shows corrections.

6.5.4 BANK_ENABLE and RESTORE_STATUS-

If the 17 ms. interruption occurs during update of the memory selection hardware, it can cause the system to hang and RAM to be overwritten. This occurs when the interruption happens in an interval when Port FF Bit 7 is zero (thus selecting the Dock Bank) and Port F4 Bit 0 is one (thus enabling Chunk 0 in the Dock Bank) and there is no memory in Chunk 0 of the Dock Bank. This can be true when there is no cartridge installed, or if the cartridge installed is an AROS. This problem is corrected by disabling or masking the interruption while updating the memory selection hardware. Figure 6.5-3 shows one implementation of this correction.

6.5.5 SAVE_STATUS and RESTORE_STATUS - The value of Port FFH which includes video mode and interruption inhibit as well as Ext. ROM/Dock Select is saved and restored as a full 8-bits. Therefore any modification of this port by code accessed between execution of SAVE_STATUS and subsequent execution of RESTORE_STATUS (e.g. via CALL_BANK or use of the Function Dispatcher) is "undone". This is one reason the Video Mode Change Service and some of the bank switching routines such as BANK_ENABLE cannot be meaningfully accessed via the Function Dispatcher.

6.5.6 CALL_BANK- Does not correctly retrieve the stack entry designating the count of parameters being passed. Memory is overwritten in the case where this count is not zero. This is corrected by setting Location 6610H = 9 (POKE 26128,9). You only need to apply the correction once; it will be duplicated in Chunk 7 if the code is relocated.

FIGURE 6.5-1

GET_STATUS CORRECTIONS

	LOCATION (HEX)	OBJ.CODE (HEX)	SOURCE STATEMENT			COMMENTS
			Input: Bank # in B			
			Output: Bank # in B (Bank Status if Exp.Bank)			
			Memory Selection in C			
			(Low Active Format)			
	6405	F5	GET_STATUS	PUSH	AF	Save Regs.
	6406	D5		PUSH	DE	
	6407	78		LD	A,B	Get Bank #
	6408	FEFE		CP	0FEH	Test if Ext.(254)
*	640A	2824		JR	Z,GS_EXT	
	640C	FEFF		CP	0FFH	Test if Home(255)
*	640E	2837		JR	Z,GS_HOME	
	6410	A7		AND	A	Test if Dock (0)
*	6411	2827		JR	Z,GS_DOCK	
	6413	.		.		
	.	.		.	(Code for Expansion Banks	
	.	.		.	not applicable)	
	.	.		.		
	.	.		.		
*	6430	0EFF	GS_EXT	LD	C,0FFH	Assume none
*	6432	DBFF		IN	A,(0FFH)	Test if selected
*	6434	E680		AND	80H	
*	6436	2812		JR	Z,GS_XT1	Not active
*	6438	1808		JR	GETHS	Get Hor.Select
*	643A	0EFF	GS_DOCK	LD	C,0FFH	Assume none
*	643C	DBFF		IN	A,(0FFH)	Test if selected
*	643E	E680		AND	80H	
*	6440	2008		JR	NZ,GS_XT1	Not active
*	6442	DBF4	GETHS	IN	A,(0F4H)	Get Hor.Select Reg.
*	6444	2F		CPL		Invert to Low Active
*	6445	1802		JR	GS_XT0	Exit
*	6447	DBF4	GS_HOME	IN	A,0F4H	All bits set are not active in Home Bank
;						
*	6449	4F	GS_XT0	LD	C,A	Memory Select to C
	644A	D1	GS_XT1	POP	DE	Restore Regs.
	644B	F1		POP	AF	
	644C	C9		RET		Return

The asterisks mark the locations modified. See next page for list of corresponding POKE's for BASIC.

FIGURE 6.5-1

GET_STATUS CORRECTIONS

(continued)

From BASIC:

```
POKE  25610,40    (Location 640AH)
POKE  25611,36
POKE  25614,40    (Location 640EH)
POKE  25615,55
POKE  25617,40    (Location 6411H)
POKE  25618,39
POKE  25648,14    (Location 6430H)
POKE  25649,255
POKE  25650,219
POKE  25651,255
POKE  25652,230
POKE  25653,128
POKE  25654,40
POKE  25655,18
POKE  25656,24
POKE  25657,8
POKE  25658,14
POKE  25659,255
POKE  25660,219
POKE  25661,255
POKE  25662,230
POKE  25663,128
POKE  25664,32
POKE  25665,8
POKE  25666,219
POKE  25667,244
POKE  25668,47
POKE  25669,24
POKE  25670,2
POKE  25671,219
POKE  25672,244
POKE  25673,79
```

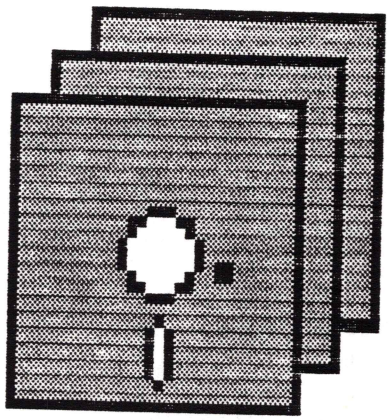

FIGURE 6.5-2

PUT_WORD CORRECTIONS

	LOCATION (HEX)	OBJ.CODE (HEX)	SOURCE STATEMENT			COMMENTS
			Input: Data in DE, Address in HL, Bank # in B			
	633B	F5	PUT_WORD	PUSH	AF	Save Regs.
	633C	C5		PUSH	BC	
	633D	CD5E64		CALL	GET_NUMBER	Bank # of Owner
*	6340	D5		PUSH	DE	Save Data
	6341	50		LD	D,B	Save Target Bank #
	6342	47		LD	B,A	Bank # of Owner
	6343	CD0564		CALL	GET_STATUS	Get Bank Status
	6346	C5		PUSH	BC	Save It
	6347	CD4D64		CALL	GET_CHUNK	Get Bit Map
	634A	2F		CPL		Set High Active
	634B	42		LD	B,D	Target Bank # to B
	634C	4F		LD	C,A	Memory Select Byte
	634D	CD9964		CALL	BANK_ENABLE	Enbl.Target Mem.
*	6350	C1		POP	BC	Saved Bank Status
*	6351	D1		POP	DE	Saved Data
*	6352	73		LD	(HL),E	Write LSB
*	6353	23		INC	HL	Increment Adrs.
*	6354	72		LD	(HL),D	Write MSB
*	6355	2B		DEC	HL	Restore HL
	6356	CD9964		CALL	BANK_ENABLE	Restore Bank St.
	6359	C1		POP	BC	Restore Regs.
	635A	F1		POP	AF	
	635B	C9		RET		Return

The asterisks mark the locations modified.

From BASIC:

```
POKE 25408,213
POKE 25424,193
POKE 25425,209
POKE 25426,115
POKE 25427,35
POKE 25428,114
POKE 25429,43
```

NOTE: The corrections to GET_STATUS and BANK_ENABLE are also required.

FIGURE 6.5-3

BANK_ENABLE AND RESTORE_STATUS CORRECTIONS

				From BASIC	
BANK_ENABLE:	Location	Object Code		POKE Address	Value
	6499H	00	NOP	25753	0
	649DH	F3	DI	25757	243
	651CH	FB	EI	25884	251
RESTORE_STATUS:					
	654AH	F3	DI	25930	243
	6570H	FB	EI	25968	251

In both cases, the Disable Interrupt and Enable Interrupt are being done by deleting the preservation of the AF Registers (PUSH AF/POP AF). If your code requires AF to be saved, you must do it prior to calling either of these routines or any other system routines that use them. Note also that if you already have the interruption masked when these routines are entered, it will be enabled when they are exitted. If this proves to be a problem, replace the Enable Interruption (EI) instruction with a NOP and do the enable at a more appropriate place in your own code.

@@@

73, K5XY

QZX presents the best software & hardware projects available for the radio amateur. While the contents are believed to be accurate, no warranty is extended on any program or project. No investigation has been made of the claims or reputation of any advertiser. It would be greatly appreciated if all correspondence requiring an answer would be accompanied by a self-addressed stamped envelope (SASE).
Copyright by QZX, 1991. All rights reserved, photocopying by permission only.
ISSN 1055-1735

```
*******************************************
* Please send me QZX for 1 year, starting *
* immediately.  Enclosed is $15.00 for    *
* twelve issues.  (Those with addresses   *
* not in Canada, the US, or Mexico send   *
* $25 in US funds for air mail delivery.) *
* Thanks.  (91/05)                        *
*                                         *
* Name _____________________________      *
* Call _______                            *
*                                         *
* Address __________________________      *
*                                         *
* City _____________________________      *
*                                         *
* State _______ Zip _________             *
*******************************************
```

QZX Journal
2025 O'Donnell Drive
Las Cruces, NM 88001

FIRST CLASS MAIL